

**REMARKS:**

No amendments have been made in the claims as it is submitted that the Examiner has not presented a prima facie case of obviousness under 35 U.S.C. 103 so that the rejection should be withdrawn.

Turning firstly to Claim 1, the Examiner admits the specific range of fibers is not disclosed in WO520 or in Kaiser. The Examiner has not referred to any additional art but instead the Examiner refers to *In re Boesch*.

In making this reference, the Examiner is presumably raising the Section in regard to "obviousness of ranges" set forth in MPEP 2144.05. This Section refers to overlapping ranges. There is no overlap between the ranges set forth in the claim and the range set in the prior art of WO520 and/or Kaiser.

WO520 discloses longitudinal reinforcing layers containing unidirectional reinforcing fibers and mats which include some transverse fibers. In each case disclosed in WO520, the mat must necessarily be considerably heavier than the 0.5 ounces per square foot as claimed in Claim 1. Each component of the mat is at least of this weight and thus the whole mat formed by a combination of these components must be very much heavier than the value stated. There is no overlap between the weight of the layers in WO052 and the weight claimed in the present application.

Kaiser discloses only very roughly certain percentages of fibers in various layers of reinforcement. There is no disclosure of specific layers not the actual weight of fibers in those layers.

The Examiner has not pointed out specific disclosures of WO052 and/or Kaiser which disclose ranges of layer weight which overlap with the range claimed in the present application.

There is no evidence presented by the Examiner of any overlap in range. In the absence of evidence of overlap, In Re Boesch is not relevant to the determination of obviousness under 35 U.S.C.103.

The Examiner will note that on page 3, line 22 to page 4, line 13 of the specification as filed is a discussion of the weight of mats and their uses. It will be noted that in general the indication of the type of weight of mat used for structural or strength purposes of greater than 0.5 ounces (150 g/m<sup>2</sup>). WO052 discloses mats which are in general considerably heavier than this value.

The question remains therefore whether it is obvious to use, with the type of resin as defined in Claim 1 that is "non linear resin materials", a reinforcement layer which has the weight specified in Claim 1 which is of the order of or less than 0.5 ounces per square foot.

In the specification as filed, the invention proposes the use of very thin lightweight material or veils. The dividing line between veils which are not intended to provide structural strength to the part but are intended conventionally to provide covering layers at the surface for appearance reasons and mats, which are used for structural strength purposes, occurs at the value 0.5. Thus mats having a weight "*greater than 0.5 ounces per square foot and generally 0.75 to 1.0 ounces per square foot*" (that is of the type used in WO052) are intended for structural purposes and veils having a weight equal to or less than 0.5 are intended for appearance reasons.

It is further submitted that the present invention is not merely a matter of optimizing a range but that the invention is based upon the concept that the present inventor has moved away from conventional thinking and conventional use of mats for the transverse reinforcement and has instead used, for the specific resin type now defined, an entirely different class of material, that is "veil" (as defined by its weight) which has not previously been used for structural strength.

This invention is surprising in that it would normally be considered that the necessary additional strength would be provided by an increase in the thickness of the mat or reinforcing fibers whereas, in the present invention to the contrary, the increased strength is provided by utilizing, in combination with the specific resin type, a thinner material.

The explanation for this surprising result is understood to be that the cross linking effect of the non-linear resin set forth in Claim 1 is degraded if the thickness of the layer of reinforcing fibers is greater than 0.5 ounces per sq ft.

The Examiner will appreciate that the resin set forth in Claim 1, which is a non-linear resin, is of a type different from that conventionally used and primarily used in WO052. Kaiser uses other resins and states that polyurethane is preferred. However Kaiser does not appreciate nor mention any distinction between the effects of these different types of resin in relation to the amount of fibers required for reinforcement.

Reinforcing layers of the type defined in Claim 1 cannot be use with Polyester as a resin since such the parts so manufactured will be unsatisfactory. Such layers can ONLY be used as veils for appearance reasons and provide no or insufficient structural effects.

In the present invention, therefore, the present inventor has moved away from the use of the conventional polyester resin to a non-linear resin, preferably urethane, and this has been found to co-operate with the use of an unexpectedly thin or lightweight layer of the transverse reinforcement fibers to provide an unexpected improved effect.

Thus it is submitted that the present invention is distinguished from in re Boesch by the fact that it moves in a direction contrary to that of the prior art.

The key point in regard to patentability of this claim under 35 U.S.C.103 is that the present inventors have realized that the cross-linking effect obtained with the type of resin now defined requires the use of a thinner (or lighter) reinforcing layer for structural reinforcement, rather than the conventional thicker layers (greater than 0.5). It is submitted therefore that, in order to establish a prima facie case as required under the statute and set out clearly in MPEP, it is necessary for the Examiner to cite a combination of prior art documents which establish that this combination is obvious. The combination cited of WO052 and Kaiser makes no disclosures concerning this combination or features. Neither reference discloses that polyurethane or cross-linked resins require a lighter reinforcing layer. The combination of the prior art documents therefore cannot disclose the combination of features set forth above.

It is further submitted that, in order to establish a prima facie case, the Examiner must show more than the existence of the resin as defined and in a separate document the existence of the reinforcing layer as defined, but that the Examiner must establish that there is some motivation in the prior art documents to provide this specific

combination. The Examiner has failed to establish such a prima facie case and the documents cited do not establish such a case.

It is submitted therefore that Claim 1 is clearly distinguished from the prior art for the above reasons and should therefore be allowed.

**Claim 11** does not include the above mentioned limitations to the quantity of fibers but instead is directed to an alternative aspect of the invention which is the location of the second or transverse layer of fibers (including transverse fiber portions) which is placed on the inside surface or second surface of the hollow shape. The claim further specifies that the reinforcing fibers **consists solely** of the first layer (of longitudinal fibers) and the transverse layer which are in contact at a location between the first and second surfaces.

Thus Claim 11 sets forth that there are ONLY two layers of fibers (within the non-linear resin material) where the second layer is located at the interior or second surface of the hollow profile so that the first layer is spaced wholly away from the second interior surface and the second layer contains the fibers with transverse portions.

This invention, as defined in Claim 11, is based upon the concept that the use of the non-linear resin material allows the reinforcement by (in addition to the conventional layer of longitudinal fibers) a single layer of fibers with transverse portions and that the single layer of fibers is located in a hollow shape by providing the fibers with transverse portions wholly at the interior (or second) surface.

Claim 11 further sets forth that the second layer of fibers is formed wholly by fibers, as opposed to a situation as set forth in Davies where there is an additional

foil layer. The provision of a foil layer within or as part of the reinforcing fiber layer prevents the penetration of the cross linking resin through the fibers and therefore separates the resin into two sections divided by the foil thus allowing de-lamination to occur at the foil.

The Examiner makes no mention whatsoever of this feature in the rejection.

WO052 discloses a three layer construction with transverse mat layers on the inside and outside of the wall and the first layer of longitudinal fibers in the middle. This is clearly NOT the claimed construction.

Kaiser discloses a series of layers which coaxially surround an axis. There is nothing disclosing the construction defined above.

There is no way to combine the disclosures of these two references to form a structure having only the two layers as defined.

It is submitted therefore that the Examiner has not established a prima facie rejection of either Claim 1 or Claim 11 based on the prior art so that the rejection should be withdrawn and the claims allowed.

Respectfully submitted

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